Stream

It is an ordered sequence of bytes in which storage and retrival can be done sequentially i.e. we can write a data do a stream 1 byte at a time or read information from the stream 1 byte at a time. A stream is link to physical device by java.io. system. In java programming perform input or output operation through streams. Java view these stream in terms of object and different operation on stream through their method calls present in java.io package. In java there are 2 types of streams

1) ByteStream or ByteOrientedStream class

   This class provides mechanism for input and output of the bytes. ByteStream are defined using 2 abstract classes –InputStream and OutputStream

2) CharacterStream or CharacterOriented class

   This class provides mechanism for input and output of characters. This class is defined using 2 abstract classes Reader and Writer.

InputStream

An object from which we can read a sequence of bytes called as InputStream. It is the super class of all InputStream. It provides basic input methods for reading data for an InputStream.

Methods of InputStream

1) int read() – It returns an integer of next available byte of input.
2) void close() – Closes the InputStream.
3) long skip(long no) – Skip the no of bytes.
4) int available – Returns no of bytes available for reading.
5) void mark(no) – Places a mark at the current point in InputStream and remains valid till the no of bytes are read.
6) void reset() – Resets pointer to the previously set mark or goes back to the beginning.

OutputStream

An object to which we can write a sequence of bytes is called as OutputStream. It is the super class of all OutputStream. It provides basic output methods for writing data to an OutputStream.

Methods of OutputStream

1.)Void write(int n) – Write a single byte to an OutputStream.

2.)Void close() – Closes the OutputStream.

3.)Void flush()- Clears the buffer.

Classes of ByteStream Class

1.) ByteArrayInputStream

It uses a byte array. It having 2 constructors.
I)ByteArrayInputStream(int a[])
II)ByteArrayInputStream(byte a[],int start,int n)

1) ByteArrayOutputStream

It uses a byte array for output having default size 32 bytes. It has 2 constructors – i) ByteArrayOutputStream() ii)ByteArrayOutputStream(int n)

2) FileInputStream

This class creates an InputStream used to read bytes from a file. For FileInputStream handle or declare the FileNotFoundException. It has 2 constructors – i) FileInputStream(String path)
ii) FileInputStream(File Object)

3) FileOutputStream

This class creates an OutputStream used to write bytes from a file. It has 3 constructors – i) FileOutputStream(String path)

ii) FileOutputStream(File Object)

iii) FileOutputStream(String path,Boolean append)

4) BufferedInputStream

This class represents a high level stream which buffers byte by using which we can read a block of bytes at a time. Using this class we can move backword in a stream. It also support mark and next method. It has 2 constructors – i) BufferedInputStream(InputStream obj)

ii) BufferedInputStream(InputStream obj, int size)

5) DataInputStream and DataOutputStream

These are the high level stream classes used to read primitive types from a Byte Stream. For DataInputStream use DataInputStream(InputStream obj) whereas for DataOutputStream use DataOutputStream(OutputStream obj)

Classes for CharacterStream

1) CharArrayReader and CharArrayWriter

These two classes are similar to ByteArrayInputStream and ByteArrayOutputStream except that it uses char arrays instead of byte array. CharArrayReader reads from char array and CharArrayWriter writes output to a char array.

2) BufferedReader and BufferedWriter

BufferedReader class reads char from the stream and buffers it. BufferedWriter is a high level writer stream class used to write low level stream. The main advantage of buffering is we can move backward in the stream.

3) FileReader and FileWriter

FileReader class is used for reading text files. It can also be used to read a single char, an array of char or part of array of char. FileWriter class is used for writing stream of chars to a file. It can also be used to write a single char, an array of char or part of array of char.

4) LineNumberReader

This class filters how many new line sequences can be encountered while reading input. The current line number can be obtained using getLineNumber().